DOCUMENT RESUME

ED 351 514 CE 062 302

TITLE	Industrial Technology. It's an Exciting World!
INSTITUTION	Missouri State Dept. of Elementary and Secondary Education, Jefferson City.
PUB DATE	[90]
NOTE	25p.
PUB TYPE	Guides - Classroom Use - Instructional Materials (For Learner) (051)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Course Descriptions; Curriculum; Educational Objectives; Elementary Secondary Education; *Industrial Education; *Program Content; *Program Design; State Programs; Technological Literacy; *Technology; *Technology Education
IDENTIFIERS	*Missouri

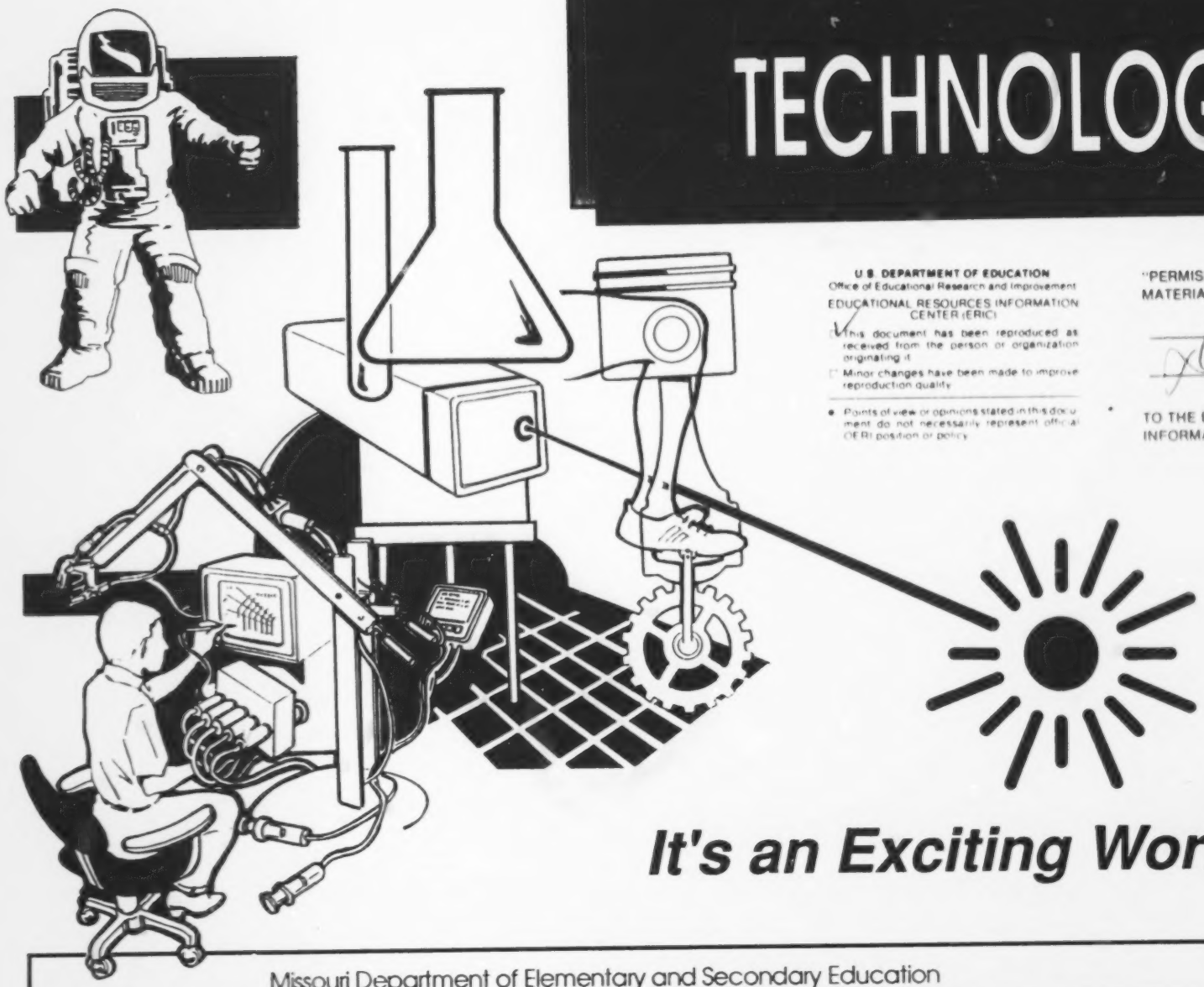
ABSTRACT

This booklet provides information on industrial technology education (ITE) in Missouri. It describes the challenges to society of changing technology and Missouri's response. It addresses ITE's mission to develop the following in each student: (1) ability to understand, evaluate, and apply industrial and technological systems; (2) values and attitudes related to appropriate use and assessment of tools, machines, materials, processes, and products; and (3) ability to use and assess technology to achieve constructive work skills and enhance occupational opportunity. It lists the goals of ITE. The scope and sequence for ITE are discussed in terms of the program's design that follows the natural pattern of student development by guiding students through a series of courses that follow the stages of Awareness (K-6), Foundation Building (6-9), Initial and Intermediate Cluster Mastery (9-12), and Analysis and Synthesis (9-12). Sample courses and descriptions of their content are provided. Some opportunities to encourage technological literacy are listed. (YLB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED351514

TECHNOLOGY



U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

O'Lund

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

It's an Exciting World!

Missouri Department of Elementary and Secondary Education

CE 062 302

BEST COPY AVAILABLE

Technology. . .

Construction Technology

Look what students do in ITE.

It's more than it used to be!

Robotics

Computer Aided Design

BEST COPY AVAILABLE

it's an exciting world!

Technology?

Technology involves our use of tools, machines, materials, processes, information and energy to satisfy our wants and needs. Technology is knowing **how** to do something with these – and it necessarily involves **being able to do**. Technology always involves a combination of knowledge, skills and attitude.

The Challenge

Society today is vastly different from what it was during the first industrial revolution. Tomorrow's society will be even more profoundly different. Most of these differences can be summed up in one word--TECHNOLOGY! Technology is the most pervasive force in our lives. It helps us explain our past, and it defines our present and future.

Business and industry constantly grapple with technology-engendered issues such as productivity, technological capability and global competitiveness. Similarly, workers are challenged to develop and maintain marketable skills.

Citizens find themselves bewildered by increasingly complex consumer decisions. Frequently they face decisions involving trade-offs between immediate gain and long-range unknowns or even known (but preferably ignored) negative consequences, e.g., the effects of toxic wastes.

The Response? Technology Education...the new basic

In regard to technology, today's schools face two urgent questions:

- *Where do people develop the understanding, skills and attitudes to deal with technology?*
- *What are the schools doing to help youth and adults address technology's challenges?*

Missouri's Technology Education Programs are the answer to both these questions.

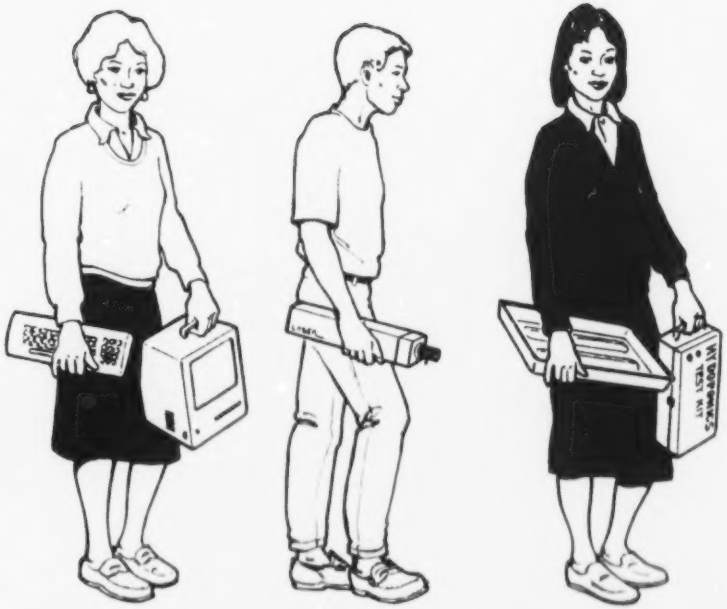
Technology Education. . .

ITE's Mission

The overarching mission of technology education in Missouri is to build citizen understanding of, and capability with, technology. This enables students to attain appropriate education/employment objectives, fulfill citizenship responsibilities and pursue meaningful leisure activities in a technological society. As the **new basic**, technology education systematically addresses three critically important missions by developing each student's:

1. **Ability to understand, evaluate and apply** industrial and technological systems.
2. **Values and attitudes** related to the appropriate use and assessment of tools, machines, materials, processes and products.
3. **Ability to use and assess** technology to achieve constructive work skills and enhance occupational opportunity.

the tools of tomorrow



Missouri's ITE Goals

Students in industrial technology education experience a systematic program that:

1. Develops an understanding of, and capability with, industrial technology — its processes, materials, equipment and products.
2. Reinforces general education's basic skills.
3. Builds basic skills in the safe use of tools, machines and processes used by industry and technology.
4. Develops technological problem-solving skills and attitudes and fosters creativity.
5. Contributes to meaningful occupational choice.
6. Encourages cooperative attitudes and constructive work habits that will help secure and maintain employment.
7. Develops consumer skills.
8. Prepares for entrance into advanced secondary and post-secondary vocational/technical as well as university programs.
9. Provides an alternative learning mode.
10. Reinforces the free enterprise system and stimulates leadership behavior.

Missouri's ITE program. . .

Scope and Sequence for ITE

Missouri's industrial technology education program is designed to follow the natural pattern of student development by guiding students through a series of courses that follow the stages of Awareness, Foundation Building, Initial and Intermediate Cluster Mastery, and Analysis and Synthesis. **All ITE courses reinforce the key basics of Missouri's core disciplines and all provide rich opportunity for interdisciplinary activity.**

(K - 6)
AWARENESS
LEVEL I

Level I: Awareness Courses (Grades K - 6)

- Elementary School Technology Education develops an initial awareness of the technological world. By infusing technology-based activities into the regular curriculum, it provides opportunities for exploring, manipulating and planning with tools, materials and processes. It also **reinforces basic mathematics, science, language arts and social studies skills.**

(6 - 9)
FOUNDATION BUILDING
LEVEL II

Level II: Foundation Building Courses (Grades 6 - 9)

- Introduction to Technology/Industrial Technology builds a foundation of technological understanding and capability. Students systematically survey energy & power, materials & processing and communications technology with demonstrations and practical activities that develop understanding, attitude, skill and problem-solving capabilities with the tools, machines, and processes of technology. **This course should be required of all students**

students touch the technology of tomorrow

(9 - 12) INITIAL AND INTERMEDIATE CLUSTER MASTERY LEVEL III

Level III: Initial and Intermediate Cluster Competency Master Courses (Grades 9 - 12)

- Exploration of Technology/Industrial Technology: Builds on Level II's foundation by extending the students' depth and breadth in technology's three clusters (energy & power, materials & processes, communications). The emphasis is on capability with a greater variety of tools, materials, processes, career awareness and **reinforcement of basic skills/core competencies**.
- Introduction to Communication Technology: Students develop communication technology capabilities through activities with graphics, photography, electronic communication, drafting (CAD) and design, media and information storage/retrieval.
- Introduction to Energy & Power Technology: Students develop energy & power technology capabilities through activities involving energy, power, instrumentation, control, electricity/electronics, transportation, conservation, hydraulics and pneumatics.
- Introduction to Materials & Processing Technology: Through manufacturing and construction activities students study production using metal, ceramic, synthetic, and organic materials. Also addressed are issues involving management, research, development, marketing and servicing as used by industries providing goods, services and structures.

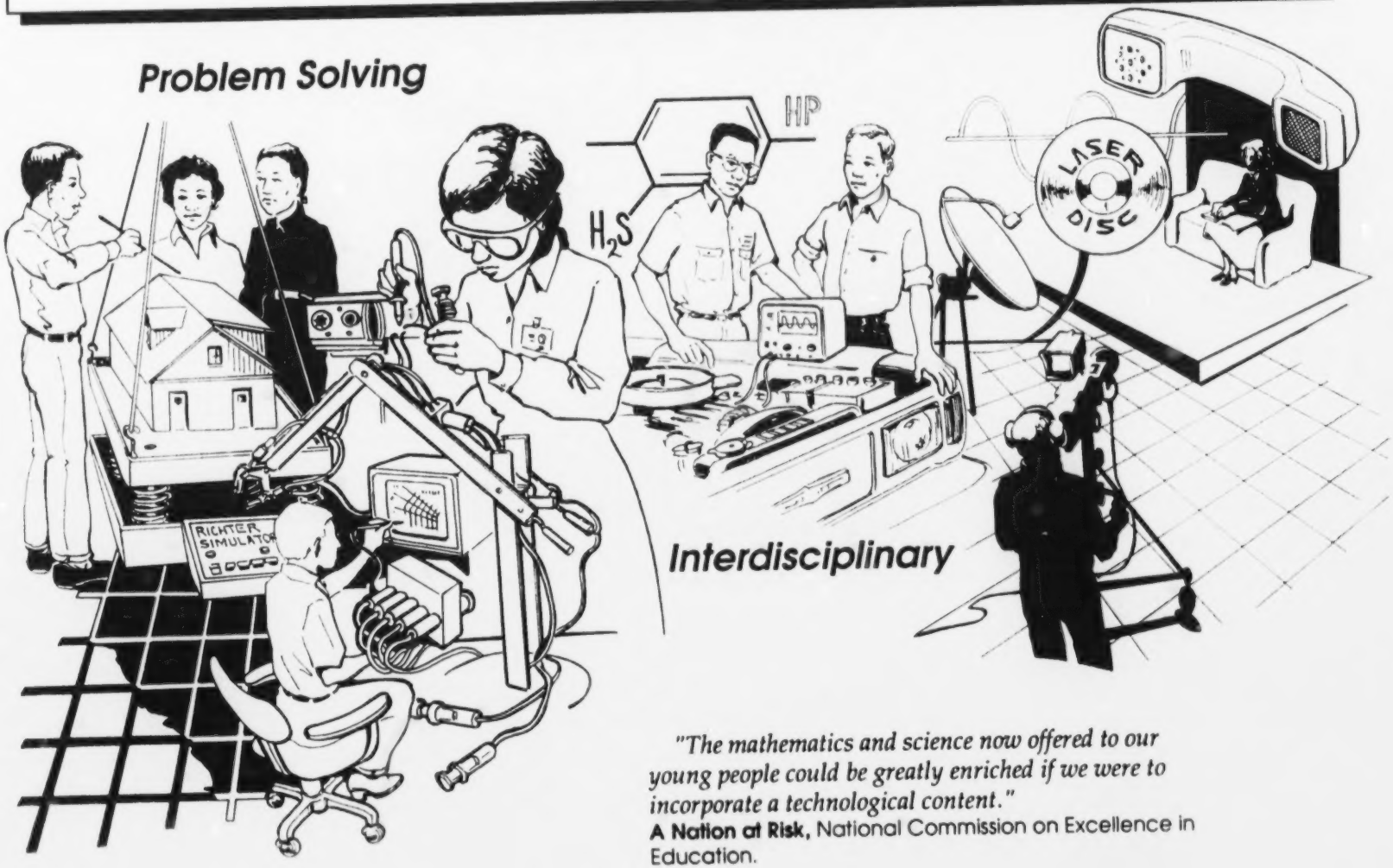
(9 -12) ANALYSIS AND SYNTHESIS LEVEL IV

Level IV: Analysis and Synthesis (Grades 9 - 12)

Analysis & Synthesis and/or Research & Development courses are used to build analytical, synthesizing and higher-order thinking skills and build depth in key areas of technology. They also offer rich interdisciplinary opportunities. Examples include, but are not limited to, the following:

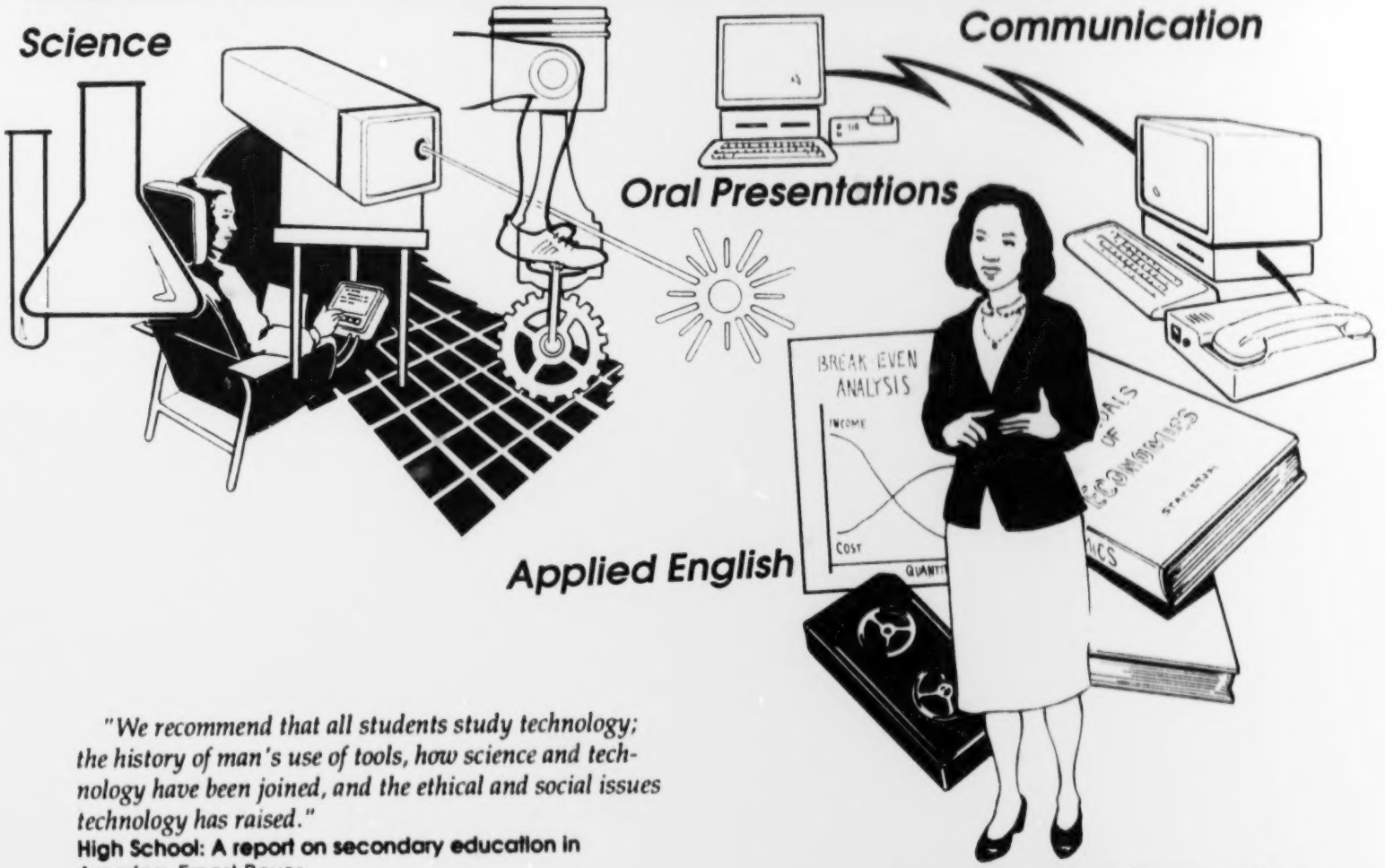
- Robotics, machine control
- Microprocessor/Digital electronics
- Free enterprise
- Alternative energy/engine technology
- CAD/CAM, Engineering graphics/design
- Research and development
- Principles of technology
- Biotechnology
- Technological problem solving

Developing excellence. . .



"The mathematics and science now offered to our young people could be greatly enriched if we were to incorporate a technological content."
A Nation at Risk, National Commission on Excellence in Education.

using technology. . .
reinforcing key basics. . .

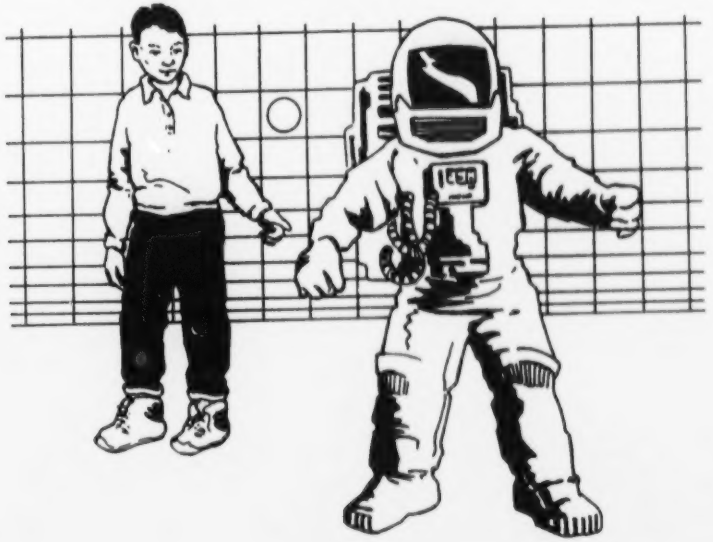


"We recommend that all students study technology; the history of man's use of tools, how science and technology have been joined, and the ethical and social issues technology has raised."
High School: A report on secondary education in America, Ernest Boyer.

Building on success. . .

More students learn more...

One of the primary values of ITE is that, in addition to exposing students to critically important content, it provides a unique path to student motivation and learning. More students learn more because of hands-on activities that effectively integrate mental, attitudinal and motor learning.



The program builds on many successes. It traces from manual training, through manual and industrial arts/industrial technology education, to the most recent evolution, Technology Education. Today, this program develops the vitally necessary skills central to technological literacy.

ITE activities actively reinforce mathematics, science, English and social studies core competencies.

"People must understand the limitations as well as capabilities of emerging technologies."
Educating America for the 21st Century, National Science Board

preparing for tomorrow

Applied Biology, Fast Generation of Plants

22

Space Technology, Transportation, Manufacturing

Interactive Video, Simulation

23

BEST COPY AVAILABLE

It's an exciting world. . . Help build it!

Many opportunities exist for interested individuals, organizations, corporations and other agencies to help future citizens learn about technology and develop the technological literacy essential to their own success and that of Missouri and America. Among these are opportunities to encourage:

- ❑ Enrollment in technology education courses
- ❑ Integration of science/technology/mathematics/English activities
- ❑ Participation in the Missouri Technology Exposition
- ❑ Building of business/industry/labor/education partnerships
- ❑ Donation of equipment and materials
- ❑ Providing internships and cooperative learning experiences

Join in helping Missouri's youth better understand, cope, prepare and master technology by contacting:

- ❑ Your local school's or university's Technology Education/ITE program

Missouri State Supervisor of Industrial Technology Education
Department of Elementary and Secondary Education
P.O. Box 480
Jefferson City, Missouri 65102 314/751-7764

Photograph Site Credits:
Farmington School District
South Callaway Co. School District
West St. Francois Co. School District

Permission is granted to reproduce any portion of this document with acknowledgment.